

Chapter 5. Fishery Management Program

This MSFMP establishes a fisheries management program for market squid and procedures by which the Commission will manage the market squid resource and the various fishery components. It also sets the limits of management authority for the Commission when acting under the MSFMP. Management measures implementing the MSFMP, which directly control fishing activities, must be consistent with the goals and objectives of the MSFMP, MLMA, and other applicable laws. These management actions are to be considered regularly with an exception that provides for more timely Commission action under certain specific conditions. Procedures in this FMP do not affect the authority of the Director of the Department of Fish and Game to take emergency regulatory action under §7710 FGC.

5.1 Potential Management Measures

This section of the FMP describes potential management measures and their application for the market squid fishery. The Commission may implement these management measures or others, as appropriate, on a scheduled basis. The Commission may also implement any of these measures when action is deemed necessary under authority of the points of concern process (see Section 5.4.1) and the socioeconomic process (see Section 5.4.2). In addition to the following management measures, other types of actions may also be valid and are intended to be available to the Commission providing they are consistent with the criteria and procedures contained in this MSFMP.

Harvest Control

A harvest control rule is a numerical harvest objective which differs from a quota in that closure of a fishery (prohibition of retention, possession or landing) is not automatically required when the guideline is reached. A harvest control rule may be a range or a point estimate. Bycatch may be allowed after a harvest control rule is reached although some allowance for bycatch is usually made when the harvest control rule is set.

Quotas

Quotas are specified harvest limits that, once attained, cause closure of the fishery for that species, gear type or geographic area. Quotas may be established for intentional allocation purposes, to terminate harvest at a specified point, or other purpose. They may be specified for a particular area, gear type, time period, species, or species group.

Bycatch

Regulation of bycatch (fishes taken in a fishery, whether kept or discarded, that are not the target species) is often necessary to limit or prevent the take of a species that is caught incidentally while catching another species or species group. Management measures to regulate bycatch include an incidental allowance (a regulatory provision to allow bycatch in a fishery) and an overall incidental reserve that is subtracted from the total harvest guideline (the amount of catch allowed) or quota.

Time (Season)/Area Closures

Time (season, days of the week, or time of day) and area closures have traditionally been used to limit the amount of time or area available to harvesters. These may include closed times or areas for the entire fishery, regions of the coast, specific user groups or individuals. Time/area closures may also be used to reduce conflict between user groups. Various restrictions on season and area closures exist in California. Time closures may be implemented to protect spawning individuals when they are most vulnerable.

Harvest Replenishment Areas (Marine Protected Areas)

Areas declared harvest replenishment areas would prohibit the taking of market squid. These areas would serve to limit effort geographically and protect portions of the stock. Due to the elimination of fishing pressure, spawning may proceed uninterrupted in harvest replenishment areas, providing protection to market squid from overexploitation (providing fisheries enhancement) and space suitable for forage reserves.

Seasonal Landing Limits and Trip Frequency Limits

Seasonal catch limitations (i.e., landings limits) serve to prevent expansion in the volume of the current fishery. Specified harvest limits, once attained, cause the closure of the fishery. Seasonal catch limitations may be allocated between the northern and southern fisheries. A trip or landing limit is the amount of a managed species that may be taken and retained, possessed or landed from a single fishing trip or during a specified period of time. A trip frequency limit is a limit on the number of trips during a specified period of time. Trips may be defined in various ways depending on circumstances. Trip landing limits and trip frequency limits are used to delay reaching a quota or harvest control rule and avoid premature closure of a fishery. They can be utilized to minimize targeting on a species while allowing landings of some level of incidental catch. Trip landing and frequency limits may also be used to discourage waste by limiting landings to amounts that can be utilized by available markets and/or processing capabilities.

Effort Controls

Effort limitation includes almost all measures to restrict or reduce fishing activities. Limited entry programs restrict the total number of permitted fishing

licenses or vessels in order to maintain the long-term economic viability of the fishery. This matches the level of effort to the health of the resource and promotes conservation among participants. There are three major components of a limited entry program: (1) a fleet capacity goal, (2) initial issuance criteria, and (3) guidelines for permit transferability. The Commission may determine that management of the fishery requires some form of effort limitation to achieve the objectives of the MSFMP.

Controls on Fishing Gear

The use of fishing gear for the commercial harvest of market squid is authorized pursuant to statutes enacted by the Legislature and regulations adopted by the Commission. Implementation and modification of specific management measures regarding gear, such as definitions of legal gear, mesh size restrictions, gear marking, escape panels and ports, the length of time gear may be left unattended, light wattage, light shields, or other gear restrictions are authorized by this FMP. Gear restrictions specific to the market squid fishery may be established, modified, or removed under the Points of Concern Process. Any changes in gear regulations should be scheduled to minimize costs to the fishing industry.

Reporting and Observer Programs

Data reporting and onboard observer programs are used to collect detailed data required in some circumstances. This MSFMP authorizes development of data reporting and observer programs as determined necessary by the Commission. The MSFMP intends that any special requirement be imposed only if it is expected to enhance the ability to accurately monitor the various components of the market squid fishery, including catch, incidental catch of non-target fish, interactions with birds, marine mammals, or sea turtles, and effectiveness of historical or newly enacted regulations.

Market squid vessels and light boats are currently required to accurately maintain and submit logbooks which require the following information at specified intervals: daily catch, effort, processing, and transfer information; crew size; time, position, duration, sea depth, and catch of each haul or set; gear information; identification of catcher or lighting vessels; and any other information deemed necessary. The live bait squid fishery is not required to submit logbooks at this time.

Collection of fishery-dependent data (port samples) provides information on squid taken in the California fishery. Currently, port samples are collected to track seasonal variation in squid length, weight, sex, and maturity, and to accurately profile the state's commercial market squid fishery by tabulating catch data on a daily basis.

All vessels engaged in the harvest of market squid may also be required to accommodate on-board observers for the purposes of collecting scientific data.

An observer program will be considered for the circumstances where other data collection methods are deemed ineffective for management of the fishery. Specifications for any observer program shall be developed in cooperation and consultation.

Fees and Permits

Increasing permit fees to encourage attrition may be used to reduce fleet capacity to ensure a long-term sustainable fishery for the remaining participants. California has laws concerning commercial and recreational licenses, permits, and fees. Nothing in this FMP is intended to exclude the use of additional fees or permits in the future as long as the fee or permit is consistent with applicable law, management measures, and intent of the MSFMP.

Vessel Identification

The MSFMP authorizes the use of vessel identification requirements, which may be modified as necessary to facilitate vessel recognition and enforcement.

5.2 Definition of Maximum Sustainable Yield and Optimum Yield

Maximum sustainable yield (MSY) is defined in §96.5 FGC as follows: "Maximum sustainable yield in a marine fishery means the highest average yield over time that does not result in a continuing reduction in stock abundance, taking into account fluctuations in abundance and environmental variability."

The MSY model determines catch limits, which most often are expressed as a fixed fishing rate such that a constant fraction of the stock may be harvested each year. It is specific for each species or stock of fish, and is calculated from knowledge of abundance, life history, and population dynamics. Environmental factors are also considered since they affect growth, reproduction, and mortality rates. In many cases, providing a range of estimates for MSY may be reasonable since there are different assumptions in the model. In addition, there may be situations where the scientific information is inadequate to directly calculate MSY for a particular species, and a proxy or substitute may be used. For example, recent average catch may be used as a proxy for MSY if a period is chosen when there is no evidence of a declining abundance.

Optimum yield (OY) is generally defined as the harvest level for a species that achieves the greatest overall benefits when considering biological, social and economic factors. Optimum yield differs from MSY because MSY only considers the biology of the species in question (Wallace et al. 1994).

The Marine Life Management Act provides a definition of OY, which is similar to the generalized definition, but which gives specific direction for resource managers:

“Optimum yield, with regard to a marine fishery, means the amount of fish taken in a fishery that does all of the following: (a) provides the greatest benefit to the people of California, particularly with respect to food production and recreational opportunities, and takes into account the protection of marine ecosystems. (b) is the maximum sustainable yield of the fishery, reduced by relevant economic, social, or ecological factors; (c) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing maximum sustainable yield in the fishery” (§97 FGC).

It is not uncommon that the status of knowledge for a given stock is limited to the catch history and incomplete life history information. A precautionary approach to calculating OY in data-moderate or data-poor situations is to multiply MSY, or its proxy, by a fraction. A tenet of this principle is that less aggressive (more restrictive) harvest policies are adopted as uncertainty increases concerning the status of stocks and their response to fishing pressure (Restrepo et al. 1998).

It is important to recognize that setting an MSY for market squid is impractical for the squid fishery because fishery and biological data are not adequate and landings are strongly influence by market demand so effort data are lacking.

5.3 General Fishery Management Plan Framework

An FMP framework is a multi-year management plan that describes the processes by which the fishery will be managed, including when, how, and within what limits regulatory changes will be made, and the ranges of the resulting impacts. Pre-season and in-season adjustments to regulations may be made without FMP amendment by implementing the procedures and provisions established in the FMP framework. Instead of providing a fixed set of management measures to implement at one point in time, the FMP framework establishes mechanisms to adjust the management of the fishery to meet changing circumstances over a longer time frame. This may be accomplished through annual adjustments of seasons, quotas, etc., or through in-season adjustments needed in response to factors that cannot be precisely anticipated during a review process. Framework adjustments may be implemented more quickly than FMP amendments, allowing for more timely management response and providing for adaptive management.

Explicit instructions may be built into an FMP framework to lessen the risk that the FMP could be considered unreliable. However, highly specific guidelines may restrict the flexibility and adaptability of fishery management. Included in the FMP framework are limits and controls for how adjustments may be made. The FMP framework must specify fully the processes to be used in making adjustments including the determining activating mechanisms, procedures to be followed, and actions to be taken.

5.3.1 Plan Amendment

Framework management for FMPs is designed to be flexible, adaptable to a wide range of future conditions, and intended to function without the need for frequent amendment. However, unforeseen social, economic, environmental or biological developments may create an unanticipated situation where the existing FMP does not adequately provide for future management of the fishery. Under such circumstances, the FMP would be amended to allow for efficient and responsive management of the fishery. Fishery management plan amendments are required for major changes or controversial actions, which are outside the scope of the original FMP. Examples of actions that would require an FMP amendment include:

- Changes to management objectives;
- Changes to species in the management unit;
- A change in the definition of an overfished stock;
- Amendments to any procedures required by the FMP; or
- Revisions to any management measures that are fixed in the FMP.

An FMP amendment entails an extensive development and adoption process including input from advisory committees, public hearings, and an extended period for public comment and peer review. In addition, amendment of an FMP requires CEQA analysis of the proposed changes to the document. Once a draft plan amendment is completed, it will have to undergo the full rule-making process described in the next section.

5.3.2 Framework Actions

There are three different categories of management actions, each of which requires a slightly different process. Management measures may be established, adjusted or removed using any of the following three procedures:

A. Full Rule Making Actions (Regulatory Amendment)

These include any proposed management measure that is highly controversial or any measure which directly alters restricted access capacity or transferability. The Commission normally will follow the three-meeting procedure, which means the identification of issues and the development of proposals will begin at a Commission meeting prior to the first decision meeting. Subsequent to this meeting, there will be two decision meetings, the first meeting to develop proposed management measures and their alternatives, the second meeting to make a final decision.

Management measures recommended to address a resource conservation issue must be based upon the establishment of a point of concern and consistent with the specific procedures and criteria listed in Section 5.4.1. Management measures recommended addressing social or economic issues must be consistent with the specific procedures and criteria described in Section 5.4.2.

B. "Notice" Actions

These include all management actions other than prescribed actions that are either non-discretionary or have probable impacts that have been previously analyzed. The Commission will require at least one Commission meeting to approve routine management measures.

These actions are intended to have temporary effect and the expectation is that they will need frequent adjustment. They may be recommended at a single Commission meeting, although the Commission will provide as much advance information to the public as possible concerning the issues it will be considering. The primary examples are management actions defined as routine in Section 5.3.3. These include trip landing and frequency limits which may need to be adjusted in-season or annually. Previous analysis must have been specific as to how limits are best determined for routine management such that they can be acted upon at a single Commission meeting.

C. Prescribed Actions

Prescribed management actions may be initiated by the Department Director or Commission without prior public notice, opportunity to comment, or a Commission meeting. These actions are ministerial and the impacts must have previously been taken into account. Examples include fishery, season, or gear type closures when a quota is attained.

5.3.3 Routine Management Measures

Routine management measures are those that the Commission determines are likely to be adjusted on an annual or more frequent basis. Measures are classified as routine by the Commission through either the full or abbreviated rule making process. In order for a measure to be classified as routine, the Commission will determine that the measure is of the type normally used to address the issue at hand and may require further adjustment to achieve its purpose with accuracy.

As in the case of all proposed management measures, prior to initial implementation as routine measures, the Commission will analyze the need for the measures, their impacts, and the rationale for their use. Once a management measure has been classified as routine through one of the two rule making procedures outlined above, it may be modified thereafter through the single meeting notice procedure if: (1) the modification is proposed for the same purpose as the original measure, and (2) the impacts of the modification are within the scope of the impacts analyzed when the measure was originally classified as routine. The analysis of impacts need not be repeated when the measure is subsequently modified if the Commission determines that they do not differ substantially from those contained in the original analysis. The Commission may also recommend removing a routine classification.

5.4 Market Squid FMP Framework

The FMP framework for market squid resource management is composed of several elements, which taken individually or together, will allow the Commission to react quickly to changes in the market squid population off California without the need for a full amendment. Management measures are normally imposed, adjusted, or removed at the beginning of the fishing season but may, if the Commission deems necessary, be imposed, adjusted, or removed at any time during the year. Management measures may be imposed for resource conservation, social or economic reasons consistent with the criteria, procedures, goals, and objectives set forth in the MSFMP.

The MSFMP framework provides the Commission specific guidelines for making management decisions. However, these guidelines are intended to be flexible and allow for other management strategies that would effectively achieve the goals and objectives of this FMP and MLMA.

The MSFMP is consistent with federal management by the Pacific Fishery Management Council (PFMC) outlined in the Coastal Pelagic Species Fishery Management Plan Amendment 8 (CPSFMP) because authority to manage market squid was delegated to the State and squid is included in the plan as a “monitored-only” species.

5.4.1 Points of Concern Process

The points of concern process is one of the tools the Commission has for exercising its resource stewardship responsibilities for market squid. The process is intended to foster a continuous and vigilant review of the market squid population and fishery to prevent overfishing or other resource damage. To facilitate this process, the Department will monitor the fishery throughout the year, taking into account any new information to determine whether a resource conservation issue exists that requires a management response. The points of concern criteria are intended to assist the Commission in determining when a focused review is warranted, and which may result in the need to recommend management measures to address the issue.

This FMP framework provides the authority to act based solely on the points of concern. Thus, the Commission may act quickly and directly to address a resource conservation issue. In conducting its analysis, the Department will utilize the most current catch, effort, abundance and other relevant data. In the course of the continuing review, a “point of concern” occurs when any one or more of the following is found or expected:

- Catch is projected to significantly exceed the current harvest control rule;

- Any adverse or significant change in the biological characteristics of the market squid (age composition, size composition, age at maturity, or recruitment) is discovered;
- An overfished condition exists or is imminent (egg escapement method threshold not realized in two consecutive years);
- Any adverse or significant change in the availability of market squid forage or in the status of a dependent species is discovered;
- An error in data or a stock assessment (e.g., egg escapement model) is detected that significantly changes estimates of impacts due to current management.

Once a point of concern is identified, the Department will evaluate current data to determine if a resource conservation issue exists and will provide its findings in writing. If the Department determines a resource conservation issue exists, it will provide its recommendation, rationale, and analysis for the appropriate management measures that will address the issue. In developing its recommendation for management action, the Department will recommend alternatives from one or more of the most commonly used management measures listed in section 5.1, or other necessary measures, to address resource conservation issues.

After receiving the report, the Commission will take public testimony and, if appropriate, will implement management measures accompanied by supporting rationale and analysis of impacts. The Commission's analysis will include a description of (a) how the action will address the resource conservation issue consistent with the objectives of the MSFMP; (b) likely impacts on other management measures and other fisheries; and (c) economic impacts, particularly the cost to the commercial segments of the fishing industry. Nothing in this Section prevents the Director from exercising the authority to take emergency action as specified in the Fish and Game Code.

5.4.2 Socioeconomic Process

From time to time, non-biological issues may arise which may require the Commission to consider management actions to address certain social or economic conditions in the market squid fishery. Restricted access programs, landing limits based on market quality and timing, safety measures, and prevention of gear conflicts are only a few examples of possible management issues with a social or economic basis. In general, there may be any number of situations where the Commission determines that management measures are necessary to achieve the stated social and/or economic objectives of the MSFMP.

Either on its own initiative or by request, the Commission may evaluate current information and issues to determine if social or economic factors warrant imposition of management measures to achieve the Commission's established

management objectives. Actions that are permitted under this FMP framework include all of the categories of actions authorized under the points of concern FMP framework with the addition of direct resource allocation and access limitation measures. If the Commission concludes that a management action is necessary to address a social or economic issue, the Commission or the Department will prepare a report containing the rationale in support of that conclusion. The report will include the proposed management measure, a description of other viable alternatives considered, and an analysis that addresses the following criteria: (a) how the action is expected to promote achievement of the goals and objectives of the MSFMP; (b) likely impacts on other management measures and other fisheries; (c) biological impacts; (d) economic impacts, particularly the cost to the fishing industry; and (e) how the action is expected to accomplish at least one of the following:

- Enable a quota, harvest control rule, or allocation to be achieved;
- Avoid exceeding a quota, harvest control rule, or allocation;
- Increase sustainable landings;
- Reduce discards;
- Reduce gear conflicts, or conflicts between competing user groups;
- Extend fishing and marketing opportunities as long as practicable during the fishing year;
- Maintain or improve product volume and flow to the consumer or user;
- Increase economic yield;
- Maintain or improve the safety of fishing operations;
- Increase fishing efficiency;
- Maintain or improve product quality;
- Maintain or improve the recreational fishery;
- Maintain or improve data collection, including means for verification;
- Maintain or improve monitoring and enforcement; or
- Any other measurable benefit to the fishery.

The Commission, following review of the report, supporting data, public comment and other relevant information, may implement management measures accompanied by relevant background data, information and public comment. The action will explain the urgency, if any, in implementation of the measure(s).

If conditions warrant, the Commission may designate a management measure as a routine management measure to address social and economic issues if the criteria and procedures in Section 5.4.2 are followed.

Harvest control rules and quotas, including allocations, implemented through this FMP framework will be set annually and may only be modified in season to reflect technical corrections. In contrast, harvest control rules and quotas may be imposed at any time of year for resource conservation reasons under the points of concern mechanism. Nothing in this FMP framework chapter is intended to preclude or limit the Commission's access to the socioeconomic process.

5.4.3 Harvest Control Rules

Harvest control rules provide a mechanism to achieve sustainable use, prevent overfishing, and rebuild depressed stocks, each of which are described in the MLMA as primary conservation standards for fisheries management. Harvest control rules based on objective, measurable criteria provide assurance that conservation objectives will be met.

Harvest control rules usually determine target levels and upper limits for take. Input information such as stock size or reproductive potential is necessary to directly calculate allowable fishing mortality, but proxies may be used in situations where direct calculations are not possible due to inadequate data. Typically, an upper limit on fishing mortality or maximum fishing mortality threshold (MFMT) and a lower boundary on stock size or minimum stock size threshold (MSST) are set.

Harvest control rules are incorporated into prearranged plans that use information on stocks to make management decisions so the stock remains within safe biological limits. The rules include plans for decision making and procedures for invoking preset measures to manage the fishery. Objective and measurable stock status criteria, such as MFMT and MSST, must be specified in an FMP using harvest control rules.

In general, harvest control rules involve methods that are used to determine allowable fishing mortality each year. Often, formulas are given in FMPs that provide for direct calculation of the allowable harvest by using the current stock size, stock productivity, and other factors as inputs. However, in practice there are usually gaps in the current state of knowledge for individual species. Since it is common that the requisite data are not sufficiently known to directly calculate MSY or OY, defaults are sometimes specified in FMPs to allow use of the MSY/OY approach. In addition, increased risk resulting from such uncertainty is addressed with the precautionary principle, which establishes less aggressive harvest policies in response to greater uncertainty concerning the status of the stocks and their response to fishing pressure.

The MSY/OY control rule means a harvest strategy that would be expected to result in a long-term average catch approximating MSY as modified by environmental and socioeconomic factors. The MSFMP uses egg escapement as an alternative to MSY and OY and as data become available, improved, or are updated, the formulas and procedures for setting harvest guidelines and catch limitations for market squid may need to be modified. Changes and additions to these formulas are authorized by the MSFMP and may be accomplished through the points of concern process or the socioeconomic process.

5.5 Trigger Mechanisms

It is vital to have ways that measure or gauge the success of the management measures implemented by the Commission. Measurable long term fishery-dependent and fishery-independent data such as catch trends, recruitment patterns, and forage abundance indices should be used to monitor the effectiveness of current management measures. For example, sustained decreases in catch and or spawning stock per female recruitment will alert the Department to potential problems within the market squid population. The Department will determine appropriate trigger mechanisms for the market squid population and will use them to provide management recommendations to the Commission. In turn, the Commission could implement needed management measures in a timely manner through the points of concern process.

On a continuous basis, the Department will review landings for which harvest control rules, catch limitations and the egg escapement management measures have been implemented, and it will make projections of the landings at a minimum of once a year. If the threshold for egg escapement drops below 30% two years in a row, or If it becomes apparent that landings are substantially different than anticipated and that the current routine management measures will not achieve the management objectives, then the Department may recommend to the Commission adjustments to those measures. Such adjustments may be implemented through the single meeting notice procedure.

5.6 Management Alternatives

In addition to the framework procedures described above, initial management alternatives are proposed for implementation upon approval of the MSFMP (Chapter 6). If adopted by the Commission and implemented by the Department, these alternatives would become regulations affecting the market squid fishery. They may be modified in the future, or new regulations may be implemented, using the framework procedures in the MSFMP. Analysis of these alternatives is deferred to Chapter 7.